

NOMAD VIBRATORS

ALL-TERRAIN VIBRATORS



Ahead of the CurveSM

NOMAD VIBRATORS



Nomad 65



Nomad 65T



Nomad 90



Nomad 90T

The family of the NOMAD Vibrators has been designed to offer vehicles to the seismic industry capable of delivering high quality signals together with a high level of reliability, productivity and safety. All these characteristics, coupled with ease of maintenance and excellent ergonomic design have set a new standard for vibrator source performance. All main components, shaker, power pack, hydraulic circuits and carrier, contribute to this achievement.

SPECIFICATIONS

NOMAD 90 ACTUATOR

RM Weight	7,000 kg ; 15,418 lb
Piston Area	157 cm ² ; 24.33 in ²
Differential pressure	255 bar ; 3,643 psi
Peak Force Output	400.3 kN ; 89,995 lbf
Usable Stroke	10.16 cm ; 4.0 in.
Rated Frequency	5-250 Hz
Balance	Airbag (2)
LVDT	Schaevitz 3000 HR

HYDRAULIC

Pump	Rexroth, (2) Pressure-Compensated 633 l/min (167 gpm)
Servovalve	Atlas with Moog pilot
Filtration	3 Micron Absolute
Accumulators	1 Low Pressure, 1 High Pressure Desurge LP and HP
Oil Reservoir	400 Litres; 106 gallons
Cooler	Oil to Air

BASEPLATE

Size	200 x 143 cm ; 78.7 x 56.3 in
BP Weight	2,300 kg ; 5,066 lb
Hold-down	356 kN ; 80,000 lbf
Lift	2 Guide Rods, Two Lift Cylinders
Clearance	50 cm ; 19,7 in
RM/BP Weight Ratio	3,1

NOMAD VEHICLE

Type	Nomad, 4 x 4 Articulated Frame
Frame	High Strength Steel
Steering	Hydraulic Frame Articulation
Winch (option)	Hydraulic ; 13,600 kg ; 30,000 lb

TIRES AND WHEELS

Size	29.5 R25 XS E7 SAND TL 196E Michelin
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TRACKS

Suspensions	hydraulic cylinder and accumulator
Track width	914 mm ; 36 in.

AIR COMPRESSOR

air dryer 850 l/min (33 cfm)

DRIVE SYSTEM (ELECTRONIC CONTROLS)

Type	Hydrostatic
Pump Drive	Two out-puts High-elastic engine coupling Maximum power input 700 kW
Pumps	SAUER, variable (1) electronically controlled
Motors	SAUER variable (2)
Gear box	2 manual speeds Electronically controlled anti spin
Axles	Outboard planetaries pneumatic controlled diff lock
Brakes	service : hydraulic actuated in board wet disc parking : spring actuated hydraulic release

NOMAD 90 GENERAL

Dimensions and Weights	NOMAD 90T	NOMAD 90
Length	10.7 m ; 35 ft 1 in.	10.7 m ; 35 ft 1 in.
Width	3.63 m ; 11 ft 11 in.	3.10 m ; 10 ft 2 in.
Height	3.81 m ; 12 ft 6 in.	3.98 m ; 13 ft 1 in.
Wheel base	5.70 m ; 18 ft 8 in.	5.70 m ; 18 ft 8 in.
Front Axle	22,250 kg ; 49,009 lb	
Rear Axle	21,950 kg ; 48,348 lb	
Gross	44,200 kg ; 97,357 lb	38,500 kg ; 84,802 lb
Normal Operating temperatures		
Low temperature	- 12°C ; + 10°F	- 12°C ; + 10°F
High temperature	53°C ; 127.5°F	53°C ; 127.5°F

ENGINE

Type	VOLVO 1242 VE	Caterpillar C15
	4 stroke, water cooled, turbo-charged	4 stroke, water cooled, turbo-charged
Max power	368 kW @1800 rpm electronic control EDC III	403 kW @2100 rpm electronic control EDC III
Engine Mtng	Rubber	Rubber
Fuel tank	1,000 litres ; 264 gallons	1,000 litres ; 264 gallons
Air Cleaner	2 stages plus pre-cleaner Compliant with US EPA/Carb tier 2 and EU stage II	2 stages plus pre-cleaner Compliant with US EPA/Carb tier 3 and EU stage III

ELECTRICAL

Alternator	24 VDC, 100 AMP
Batteries (2)	24 V ; 220 Ah
Electrical circuit	Multiplexed
AC to DC convertors	24 to 12 V 15 Amp

CAB, TWO PERSON

Steel Construction, Fully Insulated, Tinted Glass,
Carpeted, Double Doors, Air Conditioner, Heater, Adjustable driver seat with Belt,
Engine and hydraulic circuit monitoring display
Vibrator rear and underneath monitoring video display

PERFORMANCE

	NOMAD 90T	NOMAD 90
Speed	23 kph ; 14 mph	25 kph ; 15 mph
Ground pressure	3 in. penetration 0.5 kg/cm ² ; 7.1 psi (preliminary)	
Gradability	60%	60%
Turn Diameter	22.95 m ; 75 ft 4 in.	22.8 m ; 74 ft 10 in.

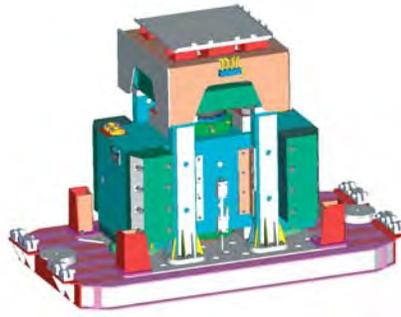
NOMAD VIBRATORS

SHAKER



The actuator of the NOMAD vibrators offers the most advanced design for simplified maintenance, high performance and reliability. This achievement is based upon four main factors:

- The use of a simple manifold design with integrated filters, regulators and pressure sensors, resulting in the reduction of the number of hoses and fittings.
- Hydraulic oil supply as close as possible to the actuator piston.
- An optimized hydraulic lift system made of 2 heavy-duty columns with a stiff mechanical assembly for smooth and fast movement of the base plate up and down.
- Piston rod and associated seals are protected from external contamination by a low pressure air bag.



NOMAD 65 Shaker



NOMAD 90 Shaker

HYDRAULIC CIRCUITS

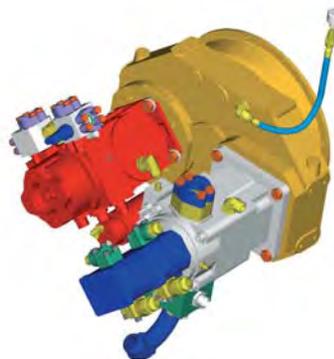


The hydraulic circuits have been designed to provide the NOMAD users with high reliability and easy access to all components, minimizing the number of pumps and hoses.

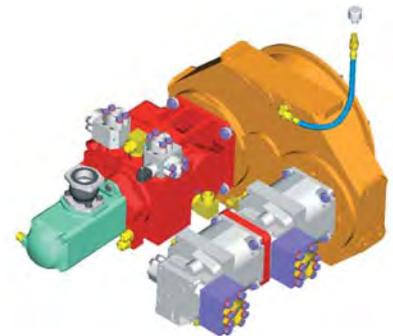
Four pumps energize all of the hydraulic functions: vehicle drive, actuator pressure and auxiliary functions (steering, charge, cooling). With no compromise in the overall performance, the hydraulic circuit has been simplified through the use of high quality components and simplified design.

This results in two major benefits:

- Easier maintenance (fewer hoses and a single manifold),
- Automatic actuator pressure up and down procedures for faster and safer vibrator startup and shutdown.



NOMAD 65 Hydraulic Circuit



NOMAD 90 Hydraulic Circuit

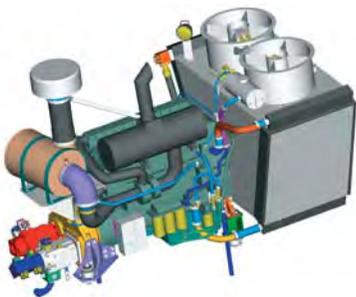
POWER PACK

The NOMAD vibrators are equipped with new VOLVO PENTA engines or Caterpillar engines, fully electronically controlled. These engines have already proven their performances and reliability under heavy use in the field. A 1,000-liter fuel tank provides the vibrators 24 hours of operation before refueling.

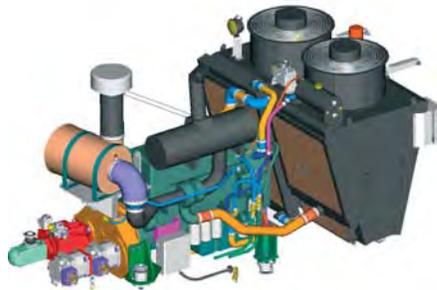
With one output for the actuator pump and a second one for the transmission, the pump drive has been designed to offer a high level of reliability due to flexible coupling to the engine and high output power capacity.

An electronic anti-spin system controls the transmission to keep good traction in all situations.

The cooling system is designed as a V shape plenum chamber integrating the hydraulic cooler and the engine radiator. Cooling air is provided by two hydraulically driven fans located on top of the chamber. The fans suck fresh air from the top of the vibrator through the core, thereby reducing dust intake.



NOMAD 65 Power pack



NOMAD 90 Power pack

CARRIER

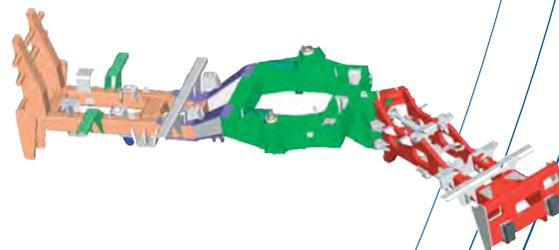
The NOMAD carriers are based upon significant technical and practical innovations.

- An articulated tubular frame, designed with the goal of eliminating structural weak points,
- Significant new features for safety and accessibility concerns such as a catwalk all around the vibrator and a video system to monitor the rear of the vehicle and the base plate area from the cab,
- A very comfortable cab, with a large panoramic view, a fully suspended driver's seat and an ergonomic dashboard equipped with video monitors and multiplexed gauges to control tens of parameters coming from the engine and the hydraulic system.

The electrical system is a multiplexed power distribution system that also measures and displays critical operational parameters. This data is recorded from several modules (IOU) placed at critical locations and transmitted to a central unit (CAMU) in the cab where they are displayed on a monitor (SCU). The driver or the person in charge of the maintenance can thus easily see parameters linked to the performance of the engine and the actuator (oil, coolant and air intake temperatures, engine rpm, oil and fuel pressures, coolant level, hydraulic circuit pressures, ...). Messages are displayed through dedicated and ergonomic screens to monitor operating performance for driving, maintenance or for warning or automatic shutdown in case of malfunctions.



NOMAD 65 Carrier



NOMAD 90 Carrier

RELIABILITY

- Reinforced chassis
- Few pumps
- Engine/pump drive flexible coupling
- Automatic actuator pressure up & down
- Piston rod guard
- Cooling system

MAINTENANCE

- Single manifold
- Few hoses
- Low profile chassis
- Multiplexed electric circuit

QUALITY DATA

- Mass/Baseplate weight ratio
- Hydraulic oil supply close to the actuator

PRODUCTIVITY

- Fast baseplate up and down
- High capacity fuel tank
- Anti spin system
- Variable speed transmission
- Wheels or tracks
- Speed and gradability

SAFETY

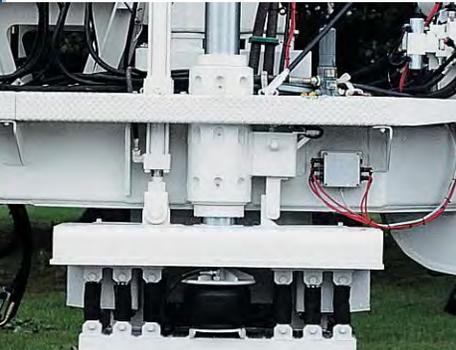
- Walkway platform
- Video system
- Comfortable cab
- Panoramic view

NOMAD VIBRATORS

NOMAD 65/65T

SHAKER

The NOMAD 65 benefits from the highest Mass/Base plate weight ratio (2.62) in the 60.000 lbs vibrator market and has completely redefined and optimized hydraulics.



POWER PACK

The NOMAD 65 is equipped either with the 422 HP VOLVO PENTA engine or with the C13 Caterpillar engine, high performance, low fuel consumption, minimal vibrations and low exhaust emissions engines.



HYDRAULIC CIRCUITS

The NOMAD 65 drive is powered by a variable displacement SAUER pump linked to 2 variable displacement front and rear hydraulic motors. The pump and motor capacity can be easily switched from low to high to adapt the transmission power to the desired speed and torque. A manual 2-speed transmission box, flanged to the hydraulic motors provides 2 additional gears. The combination of capacity from both pump and motors allows a continuous variable speed under constant power.



CARRIER

In addition to the general characteristics of the NOMAD family, the NOMAD 65 carrier benefits from:

- A low profile structure with components at eye level for an overall low center of gravity and easy access for maintenance operations.
- 4-wheel drive or full track options, using the same axles.



NOMAD VIBRATORS

NOMAD 90/90T



SHAKER

With a Mass/Baseplate weight ratio of 3.2, the NOMAD 90 actuator can achieve higher acceleration than ever before. This has been designed to produce better high frequency performance with a high power vibrator. To improve the low frequency generation, NOMAD 90 benefits from a large usable stroke.



POWER PACK

The power pack of the NOMAD 90 has the same design as the NOMAD 65 driven by a more powerful engine; the 520 HP AFTERCOOLED 1242VE VOLVO PENTA or C15 Caterpillar.



HYDRAULIC CIRCUITS

Based on the same kinematic chain as the NOMAD 65, the NOMAD 90 drive hydraulic system uses a higher capacity variable displacement pump and motors. This ensures, as with the NOMAD 65, continuous variable speed under constant power.

The actuator hydraulics benefits from 2 high flow and fast response pumps designed to deliver the highest quality low frequency performance.

Ancillary functions and the charge pump are managed by a triple stage vane pump, using a small number of hoses for better efficiency and reliability.



CARRIER

The frame and the manufacturing process for the NOMAD 90 have been completely redesigned in order to produce a vibrator which can sustain peak force vibrations at these levels. The cabin and its equipment have been derived from the NOMAD 65 design after significant field exposure.

SPECIFICATIONS

NOMAD 65 ACTUATOR

RM Weight	4,082 kg ; 9,000 lb
Piston Area	133.4 cm ² ; 20.67 in ²
Differential pressure	200 bar ; 2,857 psi
Peak Force Output	276 kN ; 62,000 lbf
Usable Stroke	7.62 cm ; 3.0 in.
Rated Frequency	7-250 Hz
Balance	Airbag (2)
LVDT	Schaevitz 2000 HR

HYDRAULIC

Pump	Rexroth, Pressure-Compensated 458 l/min (121 gpm)
Servo valve	Atlas with Moog pilot
Filtration	3 Micron Absolute
Accumulators	1 Low Pressure, 1 High Pressure Desurge LP and HP
Oil Reservoir	300 Litres; 79 gallons
Cooler	Oil to Air

BASEPLATE

Size	123 x 213 cm ; 48.6 x 84 in
BP Weight	1,560 kg ; 3,440 lb
Hold-down	278 kN ; 62,412 lbf
Isolation	Airbags (6)
Lift	2 Guide Rods, Two Lift Cylinders
Clearance	50 cm ; 20 in.
RM/BP Weight Ratio	2.62

NOMAD VEHICLE

Type	Nomad, 4 x 4 Articulated Frame
Frame	High Strength Steel
Steering	Hydraulic Frame Articulation
Winch (option)	Hydraulic ; 13,600 kg ; 30,000 lb

TIRES AND WHEELS

Size	G/Y 20 Ply Firestone, "Sand Tread" Others Available
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AIR COMPRESSOR

850 l/min (33 cfm) bi-cylinder compressor safety valve and air dryer

DRIVE SYSTEM (ELECTRONIC CONTROLS)

Type	Hydrostatic
Pump Drive	Flexible coupling
Pumps	SAUER, variable (1) electronically controlled
Motors	SAUER variable displacement (2)
Gear box	2 manual speeds Electronically controlled anti spin
Axles	Outboard Planetary gears ; Operator controlled Differential locking
Brakes	Hydraulic actuated Internal Wet Disc, Spring actuated wet Disc Parking

NOMAD 65 GENERAL

Dimensions and Weights

	NOMAD 65	NOMAD 65T
Length	10.2 m ; 33 ft 7 in.	10.64 m ; 34 ft 11 in.
Width	3.42 m ; 11 ft 3 in. (see Tires)	3.62 m ; 11 ft 10 in.
Height	3.26 m ; 10 ft 8 in.	3.78 m ; 12 ft 5 in.
Front Axle	14,848 kg ; 32,705 lb	20,000 kg ; 44,053 lb
Rear Axle	13,722 kg ; 30,225 lb	18,000 kg ; 39,647 lb
Gross	28,571 kg ; 62,932 lb	41,500 kg ; 91,410 lb
Normal Operating temperatures		
Low temperature	-12°C ; +10°F	-12°C ; +10°F
High temperature	53°C ; 127.5°F	53°C ; 127.5°F
Option	Winterization	Winterization
Paint	White	White

ENGINE

	VOLVO 1240 VE	CATERPILLAR C13
Type	4 stroke, water cooled turbo-charged 310 kW@ 2100 rpm Electronic control	4 stroke, water cooled turbo-charged 328 kW@ 2100 rpm Electronic control
Engine Mtng	Rubber isolations	Rubber isolations
Fuel tank	1,000 litres ; 264 gallons	1,000 litres ; 264 gallons
Air Cleaner	2 stages plus pre-cleaner Compliant with US EPA/CARB tier 2 and EU Stage II	2 stages plus pre-cleaner Compliant with US EPA/CARB tier 3 and EU Stage III

ELECTRICAL

Alternator	24 VDC, 140 AMP
Batteries (2)	24 V ; 220 Ah
Battery Box	Steel Construction
Lighting	Cab Interior, Clearance,
Running	
Electrical circuit	Multiplexed
AC to DC convertors	24 to 12 V 15 Amp

CAB, TWO PERSON

Steel Construction, Fully Insulated, Tinted Glass,
Carpeted, Double Doors, Air Conditioner, Heater, Adjustable driver
seat with Belt, ROPS certified,
Engine and hydraulic circuit monitoring display
Vibrator rear and underneath monitoring video display

PERFORMANCE

	NOMAD 65	NOMAD 65T
Speed	28 kph ; 17 mph	20 kph ; 12 mph
Ground pressure		3 in. penetration 0.46 kg/cm ² , 6.6 psi
Gradability	60%, 31 degrees	80%, 39 degrees
Turn Diameter (curb to curb)	20 m ; 66 ft	21.77 m ; 71 ft 5 in.

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